

**WHAT IS CLAIMED IS:**

1. An airtight sampling apparatus for sampling a waste solution including volatile organic compounds (VOC's) from a main waste solution conduit having a first pressure P1, the airtight sampling apparatus comprising:
  - (a) a waste solution sampling conduit having a first end and a second end;
  - (b) an input check valve connecting said first end of said waste solution sampling conduit to the main waste solution conduit;
  - (c) an actuatable waste solution containing and discharge cylinder assembly having a first end and a second end connected to said second end of said waste solution sampling conduit;
  - (d) an attachable and removable airtight sample holding container; and
  - (e) a pressure adjustable output valve for coupling to said airtight sample holding container, said pressure adjustable output valve being located between said input check valve and said second end of said waste solution containing and discharge cylinder assembly, thereby enabling an effective and accurate withdrawal of waste solutions including volatile organic compounds (VOC's).
2. The airtight sampling apparatus of **Claim 1**, wherein said input check valve has a second pressure rating P2 less than said first pressure P1 of the main solution conduit.
3. The airtight sampling apparatus of **Claim 1**, wherein said pressure adjustable output valve has a third pressure rating P3 greater than said second pressure rating P2 of said input check valve.

4. The airtight sampling apparatus of **Claim 1**, wherein said actuatable waste solution containing and discharge cylinder assembly includes a cylinder having a waste solution containing chamber and a moveable plunger for varying a volume of said waste solution containing chamber.

5. The airtight sampling apparatus of **Claim 2**, wherein said second pressure rating P2 is at least 5 PSI less than said first pressure P1.

6. The airtight sampling apparatus of **Claim 2**, wherein said second pressure rating P2 is 8 PSI less than said first pressure P1.

7. The airtight sampling apparatus of **Claim 3**, wherein said pressure adjustable output valve is a needle valve.

8. The airtight sampling apparatus of **Claim 4**, wherein said actuatable waste solution containing and discharge cylinder includes instrument air means connected to said cylinder for controllably moving said plunger.

9. The airtight sampling apparatus of **Claim 4**, wherein said instrument air means include an actuatable solenoid valve.

10. The airtight sampling apparatus of **Claim 4**, wherein said instrument air means include a pressurized air supply having a pressure within a range of 40-80 PSI.

11. A waste treatment system comprising:

(a) a waste solution producing unit for producing a waste solution including volatile organic compounds (VOC's);

(b) waste solution treatment units including a carbon adsorber unit, said waste solution treatment units being connected by conduit to said waste solution producing unit;

(c) a steam generator connected to said carbon adsorber unit for regenerating said carbon adsorber, said steam generator producing a blowdown waste solution; and

(d) an airtight sampling apparatus for sampling blowdown waste solution from a main waste solution conduit having a first pressure P1, the airtight sampling apparatus comprising:

(i) a blowdown waste solution sampling conduit having a first end and a second end;

(ii) an input check valve connecting said first end of said blowdown waste solution sampling conduit to the main waste solution conduit;

(iii) an actuatable blowdown waste solution containing and discharge cylinder assembly having a first end and a second end connected to said second end of said blowdown waste solution sampling conduit;

(iv) an attachable and removable airtight sample holding container for holding a blowdown waste solution sample; and

(v) a pressure adjustable output valve for coupling to said airtight sample holding container, said pressure adjustable output valve being located between said input check valve and said second end of said blowdown waste solution containing and discharge cylinder assembly, thereby enabling an effective and accurate withdrawal of samples of the blowdown waste solution including volatile organic compounds (VOC's).

12. The waste treatment system of **Claim 11**, wherein said input check valve has a second pressure rating P2 less than said first pressure P1 of the main solution conduit.

13. The waste treatment system of **Claim 11**, wherein said pressure adjustable output valve has a third pressure rating P3 greater than said second pressure rating P2 of said input check valve.

14. The waste treatment system of **Claim 11**, wherein said actuatable waste solution containing and discharge cylinder assembly includes a cylinder having a waste solution containing chamber and a moveable plunger for varying a volume of said waste solution containing chamber.

15. The waste treatment system of **Claim 11**, wherein said second pressure rating P2 is at least 5 PSI less than said first pressure P1.

16. The waste treatment system of **Claim 11**, wherein said second pressure rating P2 is 8 PSI less than said first pressure P1.

17. The waste treatment system of **Claim 11**, wherein said pressure adjustable output valve is a needle valve.

18. The waste treatment system of **Claim 11**, wherein said actuatable waste solution containing and discharge cylinder includes instrument air means connected to said cylinder for controllably moving said plunger.

19. The waste treatment system of **Claim 11**, wherein said instrument air means include an actuatable solenoid valve.

20. The waste treatment system of **Claim 11**, wherein said instrument air means include a pressurized air supply having a pressure within a range of 40-80 PSI.